

## **Historic, archived document**

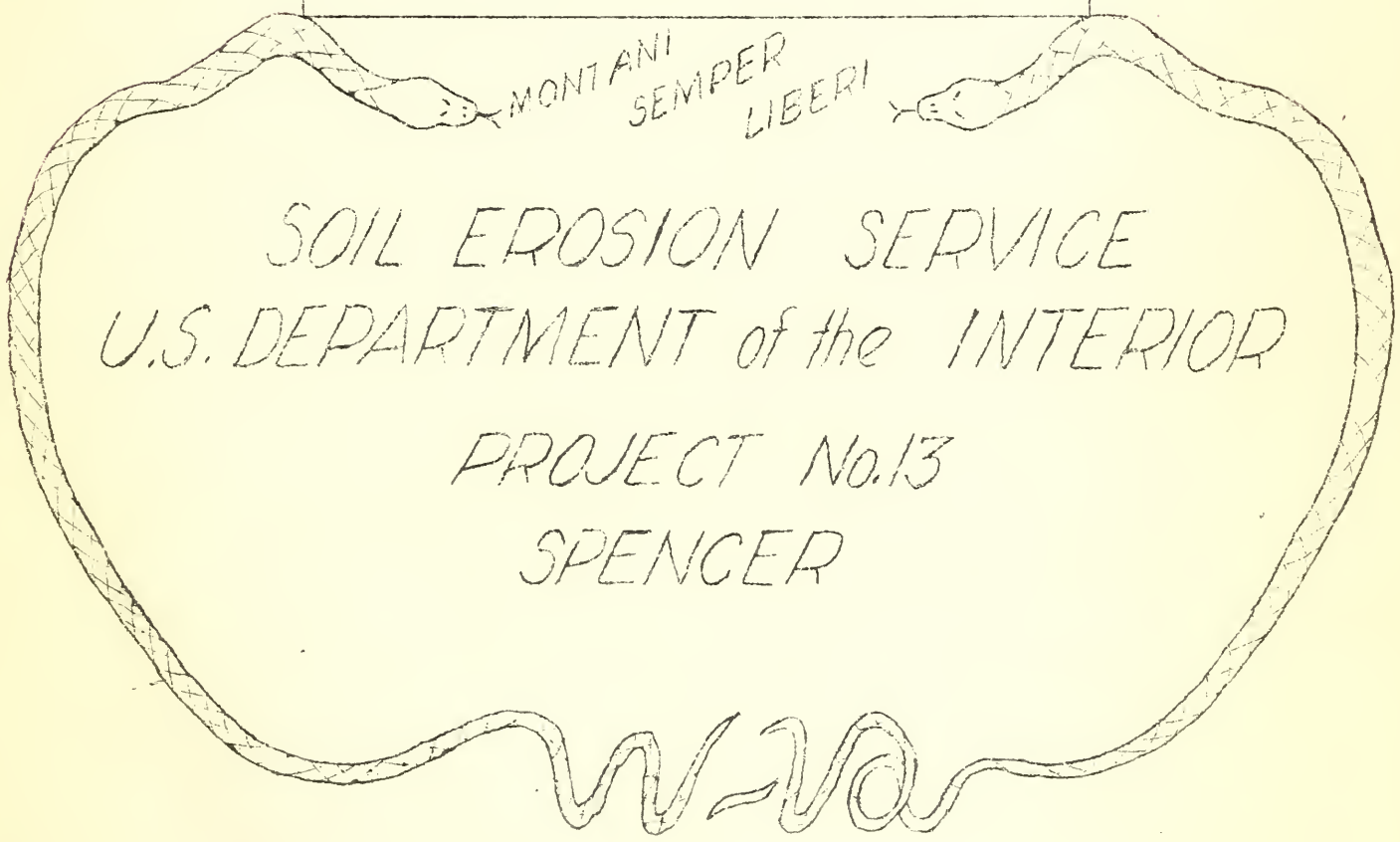
Do not assume content reflects current scientific knowledge, policies, or practices.



LIBRARY  
U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF SOIL CONSERVATION  
WASHINGTON, D.C.



FARM  
COOPERATOR



SOIL EROSION SERVICE  
U.S. DEPARTMENT of the INTERIOR  
PROJECT No. 13  
SPENCER

MONTANI  
SEMPER  
LIBERI



## HISTORY OF SOIL EROSION

Many years ago, the American people were warned about the evils of erosion by Washington, Jefferson and other national leaders of that time. Regardless of these warnings, erosion has been permitted to continue in this country, not merely progressively, but at an accelerated rate.

When the American people are suddenly confronted with a crisis or disaster, they respond as a unit and with dispatch, but as a nation they are not easily excited and are tolerant of these evils that they feel are the business of the people as a whole. Thus, we find the basis for the statement, "What is everybody's business is nobody's business." Loss of soil due to erosion falls into the second of these classes, and, although we have been warned of these losses for many years, we have been unwilling to take an aggressive stand against this national menace. The story would, no doubt, have been different had we been confronted by the invasion of an enemy who annually took away 100,000,000 tons of our richest agricultural soils. Yet, that is exactly the amount of the annual loss of soil removed by the Mississippi River alone. This does not measure the entire loss, since each year sees progressively greater losses due to floods and the silting of stream channels and reservoirs.

Twenty years ago our Federal Government became actively engaged in the study of methods of soil conservation and erosion control. Today there are several Experiment Stations where accurate study of soil erosion losses are made and where measurements can be taken of the amount of soil lost from soils of different type, cover and degree of slope. These Experiment Stations have contributed very valuable information to men interested in these studies and serve as the basis for recommendations covering various soil erosion control programs.

During the past 18 months the Federal Government has established 30 Soil Erosion Projects to serve as major demonstration areas in the control of soil erosion. These project areas are located in the various parts of the United States and each station is located in an area that has a typical form of erosion. It is the aim of these projects to decrease the amount of water loss and thus the amount of soil removed in the general farm practices that are being employed in the various areas.

It has long been recognized that a vegetative cover is one of the most effective means in establishing desirable soil erosion control and wherever possible, it has been the policy of the various projects to employ a vegetative cover in controlling soil erosion losses.

Project #13, with headquarters at Spencer, West Virginia, is the only Soil Erosion Project located within West Virginia. This project covers an area of 152,000 acres, and the method of control employed is chiefly one of pasture and meadow improvement accompanied by reforestation.

In formulating the program that is being carried out on this project, it has been the policy to ask the cooperating farmers for their advice and aid in developing a program that would be practical from the standpoint of the farm cooperator and at the same time meet the requirements laid down in the controlling of soil erosion losses as understood by the staff of the Soil Erosion Service. We have been particularly fortunate in this project area to have contacted farmers who are interested in developing a program that will solve their erosion problems. Members of the staff of the Soil Erosion Service are very glad to work with the farm cooperators and do anything with-





in their means to work out a properly balanced program that will lead toward the improvement of the general farm practices within the area and also arrive at a satisfactory solution of erosion control.

There are a great many different angles to be considered in formulating such a program. There is that phase of the work which deals almost entirely with the transportation and application of materials such as the distribution of lime, seed and fertilizer. There is that phase of the work which deals with the reorganization of the general farm practices such as the adoption of rotation of crops, the introduction of legumes and the employment of improved pasture management methods by the farmers of the area. There is that phase of the work dealing with the proper care of our wood lots, the reforestation of our steeper areas and the proper utilization of the present wood lots. There is that phase of the work which deals with the proper education of our farm people and the appreciation for those things which only a farm home and a farm environment can supply.

The matter of education deals not only with the vocational training of the farm youth, but deals with the adult education of the men and women who are making the farm, a home and a place where they intend to spend their entire lives. The Soil Erosion Service is interested in all these phases of work and would be very anxious to improve any condition that will lead to a fuller and more abundant life for our farm people.

We feel that the agricultural future of the farm people of this area should be greatly helped by practicing a program such as that proposed for the farmers of the area. We appreciate the cooperation and work that has been carried on in making the program a success thus far.

We are very glad to extend to the cooperators and to those farmers who are now awaiting an opportunity to participate in our program our most grateful thanks for the work which they have thus far accomplished, and we hope that they can further work with our organization and obtain those many benefits which are in store for them.

--- H. M. Hoover, Regional Director.

\* \* \* \* \*

#### A PERMANENT CURE FOR EROSION

Vegetation in the form of forest or in thick grasslike growth is an inexpensive, permanent cure for erosion. In one form or another it can be used on all kinds of land, on any degree of slope and under all varieties of climate where there is heat and rain enough to make plants grow. Of course, all land cannot be used for forest and the thick-growing crops. We must devote large acreages to the erosion-producing, clean-cultivated crops, such as corn, cotton, tobacco, and potatoes; but it has been definitely shown that the two types of crops can be grown in conjunction with one another in such a manner as enormously to reduce soil and water losses. It now remains to educate the farmers of the Nation with respect to the advantages of the soil-protective types of agriculture. This can be done as soon as the Nation decides to adopt better farming methods, methods which call for the use of land more nearly in accordance with its adaptability and fitness and for the efficient protection of all cultivated slopes.

....Reprinted from the Yearbook of Agriculture, 1934, of the United States Department of Agriculture. This was written by Director Bennett as a staff member of the Bureau of Chemistry and Soils of that federal department.

\* \* \* \* \*

Erosion takes 21 times as much plant food, from the soil, as do growing crops.





## SOILS DEPARTMENT ACTIVITIES

Many of the cooperators will recall that a man connected with the Soil Erosion Service has been to their farms to make soil maps. When the soils man arrives at the farm he first draws the boundary lines of the farm on the airplane picture. Later a copy of the airplane picture of the cooperator's farm will be cut up, mounted and sent to each cooperator. The map made in this manner will contain much soils information that will prove of interest and value to the farm owner.

It is the purpose of the Soils Department to include here a series of descriptions of the different kinds of soils so that the farm operators will be able to recognize most of them. In making his map, the soils man considers, not only the type or kind of soil, but the kind and amount of grass, cultivated crop, or other cover, the steepness of the slopes, and the depth of the surface soil left, which will indicate the amount of erosion that has taken place.

The purpose of the soil erosion survey is to provide a permanent record of the soil conditions, to find out what condition of erosion exists on the farm and on the different kinds of soil, so that the agronomist will have that information at hand before he meets the farmer.

The kind of soil that is most widespread over the Reedy Creek Project area is the one called Meigs clay loam. This is seldom found in the natural uneroded state. A few wood-lots may have this type with all of the topsoil left on it. As it was before it was cleared of timber the Meigs clay loam was not a clay loam but was a lighter soil, what is called a silt loam. The surface soil down to the depth at which the air could enter it

readily, was about seven inches deep. It was light brown or yellowish in color. When the timber was cut off and men started to cultivate it, so that rains could beat upon the bare soil it began to wash. The result is that now there is ordinarily only two to four inches of silt loam left. When plowed, the plow reaches below that layer and brings up some of the clay loam, which is yellowish-brown in color and extends down to 18 inches or two feet below the surface and is quite compact. Below that the soil is red, stiff clay. Sometimes washing has been so severe that all the surface soil and the upper subsoil has been removed, exposing the red clay in spots. This is an extremely variable soil and small patches of other kinds of soil are included when it is impracticable to plot them on the map. When farmers receive their maps, they will notice that small patches of gray and yellow soil, and red clay are included with the Meigs clay loam. This has been found necessary.

The Meigs clay loam, then, is light brown or yellowish silt loam about two to four inches deep, underlain by yellowish-brown clay loam to about two feet under the surface, and the lower subsoil is red clay.

The soil is formed by the weathering of the thick sandstone, the sandy shale, the greenish shale, and the red shale which are so often seen in the deep road cuts.

From time to time descriptions of other soils will appear in the "Farm Cooperator." We hope it may prove of interest and value to the readers.



## RELATION OF RAINFALL TO THE DEPTH OF WELLS

Precipitation in general throughout the area of Project #13 is somewhat varied as the rainfall appears local in nature. For example, on October 31st .61 inches of rain fell at Lock #3 at Elizabeth, West Virginia, while at Lock #4, three miles up the Little Kanawha river, no rainfall was recorded. In general, however, the rainfall is ample and well distributed. Summer rainfall occurs as thunderstorms or as moderate showers.

The average yearly precipitation in Project #13 is 43 inches. The average precipitation is highest in July or August and lowest in October and November. For the present year August had the heaviest rainfall with 5.39 inches falling, while October, the driest month, had only .92 inch .

It is interesting to note that in August, the month of the greatest rainfall, 7.66 inches fell at one of our gauges at Elizabeth. At the same station in October, the month of the lowest precipitation, only .57 of an inch of rain fell.

The Soil Erosion Service has placed rain gauges in every part of the project in order to record accurately the amount of rainfall. In order to get the relation of rainfall to the depth of wells, wells which are near the rain gauges are measured once a week. With high precipitation the water in the wells rises and vice versa when little rain falls.

The amount of water in the various wells throughout the area varies considerably. For example, one well showing eight feet of water in July dropped to three inches of water in November. This particular well is located on a rolling hill. The soil has no water holding capacity because of the lack of forests. On the other hand, a well in another part of the area which is surrounded on all sides by trees has not

varied over one foot in depth the entire summer. The roots of the trees which penetrate into the ground hold in place the porous soil which has a high capacity for holding water.

The depth of the wells also has its effect on the variation of the depth of the water in them. The deeper wells are fed by underground currents of water and do not vary as do the shallow wells which are fed by surface water.

As the air in a forested area is kept nearer to the saturation point than that in an open field, therefore, the probability of precipitation in forests is greater than in the open. During the month of July, a rain gauge at Grace, West Virginia, which is surrounded by forests, recorded 6.08 inches of rainfall. During the same month at a rain gauge on the top of Limestone hill, a region lacking forests, recorded only 3.13 inches of rain.

\* \* \* \* \*

. WE STILL DO

A man from Mars alighted in America, intending to remain if he liked the country, and engaged an experienced booster to serve as guide.

As the two drove across country, the Martian observed the strange color of the creeks and rivers and asked what made the water so dark.

"That," said the booster, "Is mud made of topsoil. Most of our land is sloping and the usual method of cultivation encourages washing. In a few years our soil will be gone."

"But why is it permitted?" asked the Martian.

"Oh," said the booster, "this is a free country and a man can do as he pleases with his own property."

Robert Quillen -- in the Atlanta Constitution.





## COOPERATORS' MEETING

Hill Grove, January 4th, 1935.

The meeting was called to order by the Chairman, Mr. C. C. Hanna, at 7:40 p. m. After a few brief introductory remarks by Mr. Hanna concerning the pasture problems, the meeting was turned over to Mr. Owens, the Regional Erosion Specialist. Mr. Owens went immediately into the subject of Pastures. The program was carried on along the conference line. All of the farmers present were very much interested in the subject and immediately raised the problems with which they, as farmers, were confronted. Mr. Owens listed these problems on the board and with the help of the farmers the following outline was arranged:

### 1. SEEDING

- Kind of seed
- Seed bed preparation
- Time of seeding
- Method of seeding
- Rate of seeding per acre

### 2. FERTILIZATION

- Kind of fertilizer
- Rate per acre
- Time to apply
- Method of applying
- Cost per acre

### 3. LIMING

- Kind of lime to use
- Rate per acre
- Time to apply
- Method of applying

### 4. PASTURE MANAGEMENT

- Carrying capacity
- Time to turn on in the spring
- Time to turn off in the fall
- Temporary pasture
- Shade and water

After the outline was completed and on the blackboard the discussion was started and each point was discussed.

All farmers present took part in the discussion and because of the interest, time passed rather rapidly. During the discussions the following conclusions were reached:

Kind of pastures to re-seed--those that show some promise and it was thought unwise to scatter seed over our ordinary pastures without adding lime and fertilizer.

Kind and rate of seeding to use--Kentucky blue grass  $1\frac{1}{2}$ #, Orchard grass  $3\frac{1}{2}$ #, Lespedeza  $5\frac{1}{2}$ #, Redtop  $2\frac{1}{2}$ #. This mixture ordinarily to be sown at the rate of 12 to  $15\frac{1}{2}$  per acre.

Preparing seed bed--Plow only that land with very gentle slope. On other land the seed should be sown and the ground scratched with a spike tooth harrow, if possible.

Time of seeding--about the first of March.

Fertilization--It was concluded that barnyard manure should be used whenever available. 20% superphosphate to be used at the rate of 300 to 400 pounds per acre. It was concluded that, although nitrogen would improve the pasture, it was not profitable from a dollars and cents standpoint. It was decided that superphosphate could be applied, any time of the year convenient for the farmer, broadcast or with any kind of suitable spreader.

Liming--It was decided by the group that it would probably be more practical, under the circumstances prevailing in the Hill Grove community, to use pulverized limestone at the rate of about a ton and a half per acre to be applied broadcast or with some type of lime spreader. From a management point of view, discussion was held on the carrying capacity of the pasture. It was decided that around four acres of





the better pastures would be required per animal unit (1 cow, 1-1000# steer and 8 sheep)

The best time to turn out in the spring--from May 5th to the 15th. Time to take off in the fall was concluded to be about October first.

Supplementary pastures suggested and included such crops as oats, wheat, rye, vetch, sweet clover and lespedeza.

Shade and water were held to be very important in any kind of pasture management.

Quite a number of charts were presented during the discussions that were very valuable and helped to arrive at conclusions.

We were very fortunate to have Mr. McKeever, Chief Agronomist, present, who brought out different points of interest. It was a good meeting, full of interest and helpful discussions. All took an active part in the discussions.

The following farmers were present:

C. C. Hanna	W. M. Hall
Bert Cain	Paul Hess
O. J. Chouvront	Hugh Eagle
W. W. Aylor	A. O. Monroe
J. A. Springston	Robert Aylor
Howard Connolly	S. T. Tanner
Russell McGinnis	Loyd Morgan

The next meeting will be held February 1st. The subject for discussion will be "Meadow Improvement."

Before the meeting was closed a motion was made that the results of the Pastures meeting be published in the next Farm Cooperator. This motion was seconded and was voted unanimously.

The meeting closed at exactly 10:15 p. m.

## QUESTIONS AND ANSWERS

Q. Should meadows be pastured?

A. Good meadows are never improved by pasturing. Serious damage is sometimes done by pasturing good alfalfa or clover meadows. It is a debatable question as to whether old meadows can be improved by feeding cattle on them during the fall, winter or spring. If feeding is done on old meadows, it should not be done at a soft time.

Q. When should cattle be removed from pastures in the fall?

A. It will depend upon the season. Probably the best date is around October first, if we are considering it wholly from a standpoint of the pasture. The most of the damage done to pastures is done during the late fall, winter and early spring rather than by over-grazing during the growing season. Farmers would do well to remove their cattle in the fall before they have had time to do serious damage and leave them off until the grass has had a good chance to get well established in the spring.

Q. Is it ever advisable to pasture barley or wheat?

A. When barley or wheat is being grown for grain, or as a nurse crop in establishing a meadow, it should never be pastured. If it is being used to provide a supplementary pasture in either fall or spring, no attempt should be made to try to establish a meadow or to harvest for grain. Some farmers do pasture barley and wheat lightly at certain times with a minimum of damage; however, this is not recommended unless it is being used solely as a supplementary pasture.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
Soil Erosion Service  
Official Business

Penalty For Private Use to Avoid  
Payment of Postage \$300

A COOPERATOR

I'm a cooperator, and grand is the feel;  
No more will each rain my best topsoil steal.  
My children can use the old farm that I leave  
And will find it still useful, I fully believe.

I have signed an agreement and, boy, I feel good;  
They will plant me some trees to grow lumber and wood;  
They will dam up my gullies and help save my soil,  
Which is worth more to me than the finding of oil.

They're improving my meadows to furnish me hay  
To feed all my stock from November to May.  
They're improving my pasture where grass is so rare,  
To curb sheet erosion by keeping grass there.

I have planned for a cover on all my tilled fields  
To prevent winter washing and double my yields,  
I will plant no more corn on the hillsides so steep,  
But will plant them to sod for my cattle and sheep.

I'm proud of the part I can play in this game,  
To stop soil erosion, my land to reclaim.  
The picture I'm painting is rosy, 'tis true,  
By golly, I mean it, I'll carry it thru.